PESTS NOT KNOWN TO OCCUR IN THE UNITED STATES OR OF LIMITED DISTRIBUTION, NO. 18: SOUTH AMERICAN FRUIT FLY

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Order: Family — Diptera: Tephritidae

Pest — SOUTH AMERICAN FRUIT FLY
Anastrepha fraterculus (Wiedemann)

Economic Importance — *Anastrepha fraterculus* is a serious pest of cultivated fruits in many parts of South America, and apparently the most injurious species of the genus *Anastrepha*. In Argentina, it is considered to be the most important pest in all citrus areas. Many varieties of fruits are attacked, and sometimes vegetables and nuts (Ebeling 1959, Oakley 1950).

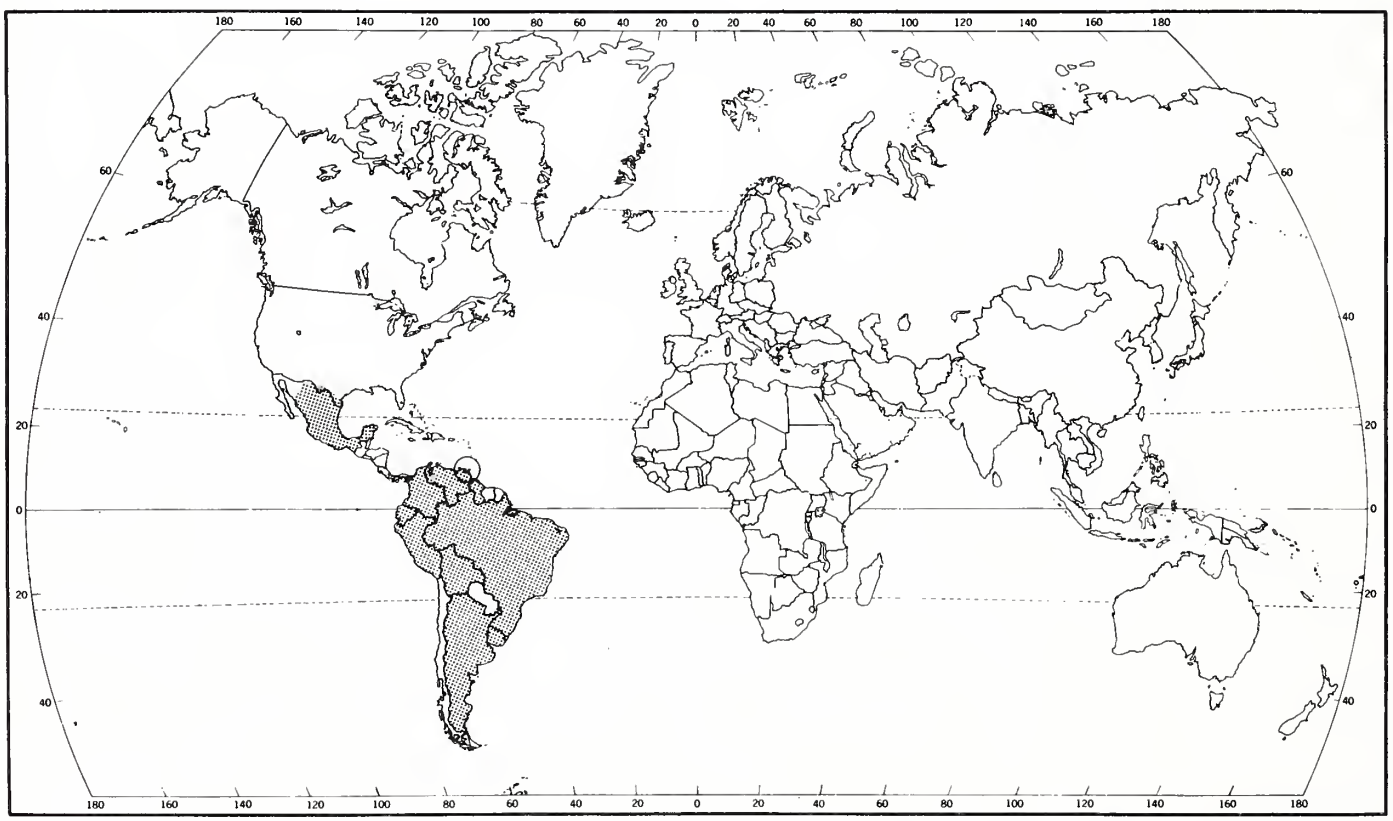
Hosts — This species shares the following hosts with *Anastrepha ludens* (PNKTO #19): *Annona cherimola* (cherimoya), *Citrus aurantium* (sour orange), *Citrus medica* (citron), *Citrus paradisi* (grapefruit), *Citrus reticulata* (tangerine), *Citrus sinensis* (sweet orange), *Cydonia oblonga* (quince), *Malus sylvestris* (apple), *Mangifera indica* (mango), *Manilkara zapota* (sapodilla), *Persea americana* (avocado), *Prunus domestica* (American plum), *Prunus persica* (peach), *Psidium guajava* (common guava), *Psidium guineense* (Guinea guava), *Punica granatum* (pomegranate), *Pyrus communis* (pear), and *Syzygium jambos* (rose-apple).

Other hosts for *A. fraterculus* include: *Annona humboldtii*, *Averhoa carambolo* (carambola), *Birnea sp.*, *Campomanesia obscura*, *Campomanesia xanthocarpa*, *Citrus grandis* (pummelo), *Citrus medica limonium* (citron), *Coffea arabica* (coffee), *Diospyros kaki* (Japanese persimmon), *Dovyalis hebecarpa* (Ceylon gooseberry), *Eriobotrya japonica* (loquat), *Eugenia dombeyi* (grumichoma), *Eugenia coloradoensis*, *Eugenia uniflora* (Surinam cherry), *Eugenia uvalha*, *Feijoa sellowiana* (pineapple guava), *Ficus carica* (common fig), *Fortunella japonica* (round kumquat), *Inga edulis* (ice cream bean), *Lucuma* spp., *Malphigia* sp., *Passiflora spp.* (passionflower), *Prunus armeniaca* (apricot), *Prunus insititis* (buillace plum), *Prunus salicina* (Japanese plum), *Psidium cattleianum* (strawberry guava), *Spondias mombin* (hog-plum), *Spondias nigrescens*, *Spondias purpurea* (red mombin), *Syzygium malaccense*, *Terminalia catappa* (tropical almond), *Turpinia paniculata*, *Vitis vinifera* (wine grape), and *Ximenia americana* (tallow-wood).

Of these hosts, the Surinam cherry, peach, and guava are preferred. The Mexican form attacks guavas and peaches, but does not appear to attack citrus, while in South America citrus is severely attacked. Tropical almond is attacked in Mexico but has not been reported as a host in South America (Oakley 1950, Weems 1980, Malavasi et al. 1980).

General Distribution

A. fraterculus is known to occur in Argentina, Bolivia, Brazil, British Guiana, Colombia, Ecuador, Panama, Peru, Tobago, Trinidad, Uruguay, and Venezuela. (Commonwealth Institute of Entomology 1958). This pest is also known to range northward to Northern Mexico and the Rio Grande Valley of Texas, where it is considered by Baker et al. (1944) as a distinct form of the species, based on different host responses (as noted in the hosts section) and possible morphological differences.



Anastrepha fraterculus map prepared by USDA, APHIS, PPQ, Biological Assessment Support Staff

Characters

Field Description

ADULTS - About 12 mm long (not including ovipositor of female), wing expanse about 25 mm. Body rust yellow or brownish yellow, with three sulfur yellow longitudinal stripes on thorax. Wings clear except for characteristic but variable yellow-brown pattern. Inverted V of wing separated from main pattern. Ovipositor stout and shorter than abdomen, tapered regularly toward tip and covered with coarse, black hairs.

Technical Description

ADULTS (fig. A) - Small to rather small, yellow brown. Mesonotum 2.75-3.3 mm long, yellow brown; the humerus, median stripe widened posteriorly anterior to acrostichal bristles and barely includes these bristles; lateral stripe from transverse suture to scutellum bright yellow; pleura yellow and yellow brown; metanotum and postscutellum rather broadly blackened laterally. Macrochaetae yellow brown to black; pile yellow brown. Sternopleural bristle slender. Wing 5.35-7.2 mm long, bands yellow orange and brown. Costal band typically separated from S band, wing pattern with considerable variation.

Female terminalia: Ovipositor sheath 1.65-2.1 mm long, stout, tapering apically, spiracles about 0.7 mm from base. Rasper rather small patch of hooks in four or five rows. Ovipositor 1.5-1.95 mm long, stout, base distinctly widened, tip narrower beyond end of oviduct and before serrate portion, serrations blunt and rounded, extending over half length of tip, sometimes less.

Male terminalia: Tergal ratio about 0.87; clasper about 0.35 mm long, moderately stout basally, greatly flattened apically, apical portion somewhat narrowed, with rather blunt apex; teeth slightly basad of middle (Stone 1942).

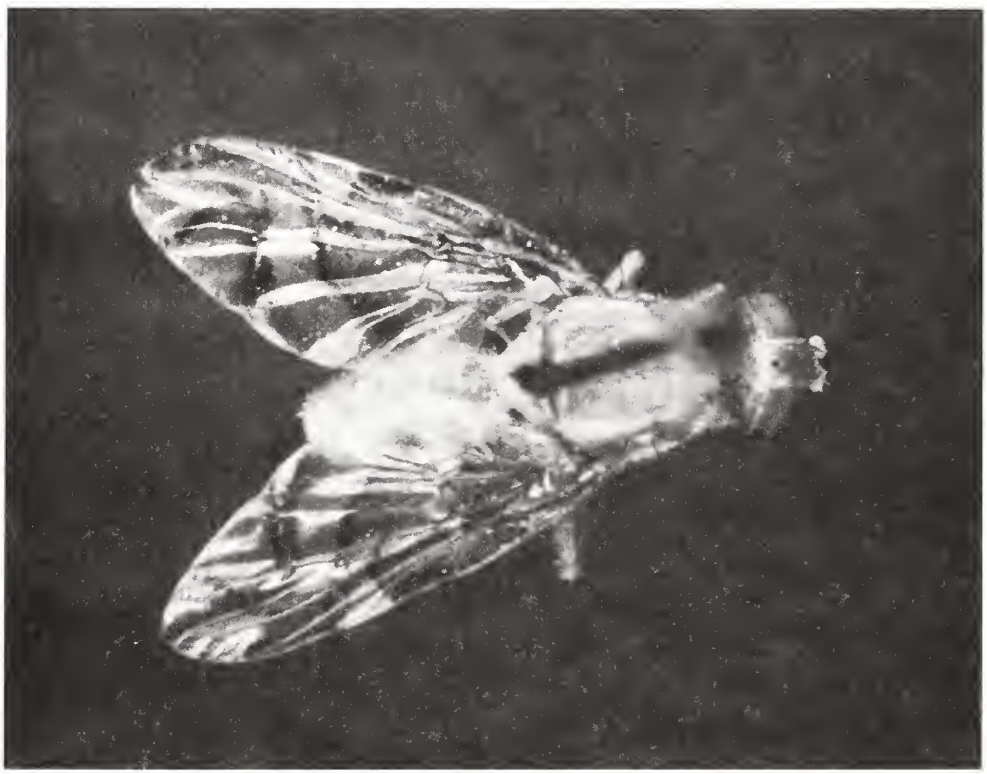
EGGS - Creamy white, elongated, tapered at end. About 1.4 mm long, 0.2 mm wide at midpoint.

LARVAE - When mature about 8-10 mm long, 1.0 mm wide, pale yellowish white, tapered slightly toward cephalic end.

PUPAE - About 4.5-6.0 mm long, 2.0-2.5 mm wide, cylindrical, dull luteous to reddish yellow or dark red.

Fruit fly larvae and pupae are difficult to identify to species level, and much more research is needed. Adult identification is usually based on the female; in most cases males are still indeterminable (Weems 1980).

(Fig. A)



A. fraterculus: A. Female adult

Characteristic Damage

Fruit fly damage is often very similar. For this species damage begins when the ovipositing female punctures the fruit for egg laying. The larvae feed on the internal tissues causing breakdown and premature drop of the fruit. The oviposition punctures often heal over and become invisible in cases of mature hosts. Sometimes sap exudation and discolored spots are present. The larvae feed in immature, ripening, or ripe fruits. Usually this feeding is in the pulp, and occasionally on immature seeds. A single larva can render a fruit worthless (Oakley 1950).

Detection Notes

1. In warm weather look for adults on fallen fruit.

2. Larvae may be found by cutting fruit and looking for larvae in the pulp.

3. McPhail traps (with Mexican fruit fly bait) have been successful in catching A. fraterculus.

Biology

This species varies considerably by season as well as by country. The preoviposition period also varies. In Peru, one egg at a time is usually laid by a female. Up to 50 eggs may be laid in a single fruit, with the total number depending on maturity and variety of the host fruit. Adults live for about a month. Length of immature stages are as follows: Egg, 3 days in summer and 6 in winter; larva, 15-20 days in summer and 20-25 days in winter. In exceptional cases adults have been known to emerge from pupae after 12, 14, and 18 months. Six to seven generations develop annually.

In general the factors that influence the life cycle of this species (and most fruit flies) include latitude, season, temperature, rainfall, humidity, availability of food, and natural enemies (U.S. Department of Agriculture 1965, Oakley 1950).

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